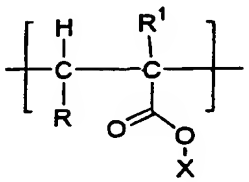
AMENDMENTS TO THE CLAIMS

1 (Currently amended). A polymer comprising the unit (I)



(I)

wherein R is selected from the group consisting of hydrogen, C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} aralkyl, C_1-C_{18} alkaryl, carboxylic acid, carboxy-C_1-C_6 alkyl, or any one of C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18}, aralkyl, C_1-C_{18} alkaryl substituted with a heteroatom within, or attached to, the carbon backbone; R^1 is selected from the group consisting of hydrogen [[,]] and C_1-C_6 alkyl groups; X is an acylating agent and wherein the polymer has a polydisperity of less than 1.4, ~~preferably less than 1.2~~ and a molecular weight (Mw) of less than 100,000.

2 (Currently amended). The polymer according to claim 1, wherein X is a carboxylate activating group~~, preferably selected from the group consisting of N-succinimidyl, pentachlorophenyl, pentafluorophenyl, para-nitrophenyl, dinitrophenyl, N-phthalimido, N-norbornyl, cyanomethyl, pyridl, trichlorotriazine, 5-chloroquinilino, and imidazole, preferably N-succinimidyl or imidazole, most preferably N- succinimidyl~~.

3 (Currently amended). The polymer according to claim 1, wherein R is selected from the group consisting of hydrogen, C_1-C_6 alkyl, C_1-C_6 alkenyl, C_1-C_6 aralkyl and C_1-C_6 alkaryl, C_1-C_6 alkylamido and C_1-C_6 alkylimido~~, preferably hydrogen of methyl~~.

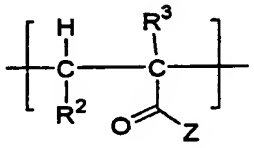
4 (Currently amended). The polymer according to claim 1, wherein R^1 is hydrogen, methyl, ethyl, propyl, butyl, pentyl or isomers thereof~~, preferably hydrogen or methyl~~.

5 (Currently amended). The polymer according to claim 1, wherein the molecular weight (Mw) is in the range 50,000-4000~~, preferably 25,000-40,000~~.

6 (previously presented). The polymer according to claim 1, wherein R is hydrogen, R^1 is methyl.

7 (previously presented). The polymer according to claim 1, wherein the polymer is a homopolymer.

8 (Currently amended). A polymer according to claim 1 comprising the unit (II)



(II)

wherein R^2 is selected from hydrogen, C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} aralkyl, C_1-C_{18} alkaryl, carboxylic acid and carboxy-C_1-$_{16}$ alkyl; R^3 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl, pentyl and isomers thereof, Z is a pendent group selected from the group consisting of NR^4R^5, SR^6 and OR^7, wherein R^4 is an acyl group~~, preferably an aminoacyl group or oligopeptidyl group~~; R^5 is selected from hydrogen, C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} aralkyl, C_1-C_{18} alkaryl; R^6 and R^7 are selected from the group consisting of hydrogen, C_1C_{12} alkyl, C_1-C_{12} alkenyl, C_1-C_{12} aralkyl, C_1-C_{12} alkaryl, C_1-C_{12} alkoxy and C_1-C_{12} hydroxyalkyl, and may contain one or more cleavable bonds and may be covalently linked to a bioactive agent.

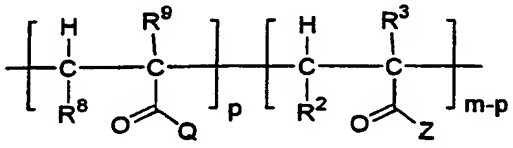
9 (Currently amended). A polymer according to claim 8, wherein Z comprises one or more hydrolytically labile groups selected from cis-aconityl, and aminoacyl groups~~, preferably 2 to 6 groups, most preferably 4 aminoacyl groups~~.

10 (Currently amended). A polymer according to claim 8 comprising the unit (II) wherein R^2 is hydrogen, C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} aralkyl, C_1-C_{18} alkaryl, R^3 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl, pentyl and isomers thereof, Z is a pendent group NR^4R^5, wherein R^4 is an acyl group~~, preferably an aminoacyl group or oligopeptidyl group~~; R^5 is selected from hydrogen, C_1-C_8 alkyl, C_1-C_{12} alkenyl, C_1-C_{12} aralkyl, C_1-C_{12} alkaryl; and wherein the polymer has a molecular weight (Mw) of less than 50,000.

11 (previously presented). A polymer according to claim 8 wherein (II) is linked to a bioactive agent and the bioactive agent is a drug.

12 (Currently amended). A polymer according to claim 11 wherein the group is an anti-cancer agent~~, preferably doxorubicin, daunomycin, or paclaxitel~~.

13 (previously presented). A polymer according to claim 8, wherein the polymer has the structure (III)

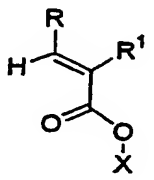


(III)

wherein R^8 and R^9 are selected from the same groups as R^2 and R^3 respectively, Q is a solubilising group selected from the group consisting of C_1C_{12} alkyl, C_1-C_{12} alkenyl, C_1-C_{12} aralkyl, C_1-C_{12} alkaryl, C_1-C_{12} alkoxy, C_1-C_{12} hydroxyalkyl, C_1-C_{12} alkylamido, C_1-C_{12} alkylimido, C_1-C_{12} alkanoyl, and wherein m and p are integers of less than 500.

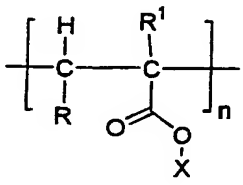
14 (Currently amended). A polymer according to claim 13 wherein Q is a C_1-C_{12} hydroxyalkylamino group~~, preferably 2-hydroxypropylamino~~.

15 (Currently amended). A process for the production of a polymer, comprising the radical polymerization of ethylenically unsaturated compounds comprising a compound (IV)



(IV)

wherein R is selected from the group consisting of hydrogen, C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} aralkyl, C_1-C_{18} alkaryl, carboxyl, carboxyalkyl, or any one of C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} alkaryl, C_1-C_{18} alkaryl substituted with a heteroatom within, or attached to, the carbon backbone; R^1 is selected from the group consisting of hydrogen and C_1-C_6 alkyl groups ~~preferably selected from the group consisting of methyl, ethyl, propyl, butyl, pentyl and isomers thereof~~; X is a carboxylate activating group; wherein the process is a controlled radical polymerization, to produce a polymer comprising the unit (I)



(I)

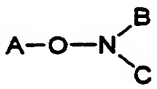
wherein n is an integer of 1 to 500 and wherein the polymer has a polydisperity of less than 1.4 and a molecular weight (Mw) of less than 100,000.

16 (Currently amended). A process according to claim 15, wherein the process is selected from the group consisting of Reversible Addition Chain Transfer Polymerization, Atom Transfer Polymerization and Nitroxide Mediated Polymerization~~, preferably Atom Transfer Radical Polymerization~~.

17 (Currently amended). The process according to claim 15, wherein the process additionally comprises a solvent, an alkylhalide Atom Transfer Radical Polymerization initiator ~~selected from alkylhalides, preferably alkylbromides~~, and a mediator which comprises a Cu(I)Br moiety complexed by a chelating ligand~~, preferably the mediator being selected from Cu(I)Br(Bipy)$_2$, Cu(I)Br(Bipy)N, Cu(I)Br(N, N', N", N"-pentamethyldiethylenetriamine), Cu(I)Br[methyl$_6$-tris(2-aminoethyl)amine] and Cu(I)Br(pentamethyldiethylene)~~.

18 (Original). The process according to claim 17, wherein the solvent is water or an aprotic solvent selected from the group consisting of tetrahydrofuran, acetonitrile, dimethylformamide, ethyl acetate, acetone, dimethylsulphoxide, methylformamide, sulfolane and mixtures thereof.

19 (Currently amended). The process according to claim 16, wherein the polymerization is Nitroxide Mediate Polymerization that takes place in the presence of an initiator having the structure

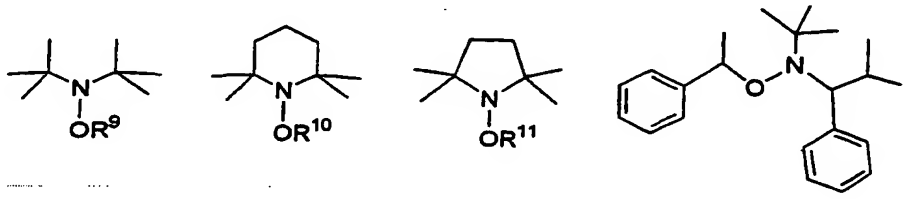


wherein A is selected from the group consisting of C_1-C_{12} alkyl, C_1-C_{12} alkenyl, C_1-C_{12} aralkyl, C_1-C_{12} alkaryl, and C_1C_{12} hydroxyalky, B and C are individually selected from the group consisting of C_1-C_{12} alkyl, C_1-C_{12} alkenyl, C_1-C_{12} aralkyl, C_1-C_{12} alkaryl and C_1-C_{12} hydroxyalkyl, may be joined so that together with N form a C_5-C_{12} heterocyclic group, and which may contain one or more additional heteroatoms selected from nitrogen, sulfur, oxygen and phosphorus.

20 (Original). The process according to claim 19, wherein A is selected from the group consisting of methyl ethyl, propyl, butyl, pentyl, hexyl, benzyl, methylbenzene,

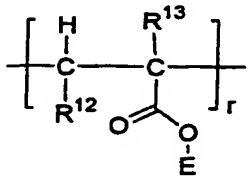
ethyl benzene, propylbenzene or isomers thereof, and B and C are selected from the group consisting of isopropyl, isobutyl, secbutyl, tertbutyl, isopentyl, sec-pentyl, tert-pentyl, adamantyl, methylbenzene, ethyl benzene, propylbenzene or isomers thereof.

21 (Original). The process according to claim 19 wherein the initiator has a structure selected from the group consisting of



wherein R^9 to R^{11} are selected from the group consisting of C_1-C_{12} alkyl, C_1-C_{12}, alkenyl, C_1-C_{12} aralkyl and C_1-C_{12} alkaryl.

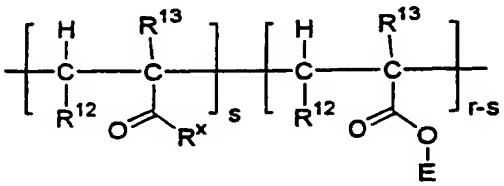
22 (Currently amended). A process for the production of a derivitised polymer, comprising the reaction of a polymer having the formula (VI)



(VI)

wherein R^{12} is a group selected from the group consisting of hydrogen, C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} aralkyl and C_1-C_{18} alkaryl groups; R^{13} is selected from the group consisting of C_1-C_6 alkyl groups; E is a carboxylate activating group and r is an integer of 5 to 500; with a reagent HR^X, wherein R^X is selected from the group consisting of $NR^{14}R^{15}$, SR^{16}

[[,]] and OR^{17}, wherein R^{14} is an acyl group~~, preferably an aminoacyl group or oligopeptidyl group~~; R^{15} is selected from hydrogen, C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} aralkyl, and C_1-C_{18} alkaryl; R^{16} and R^{17} are selected from the group consisting of hydrogen, ~~C_1-C_{12}~~ C_1-C_{12} alkyl, C_1-C_{12} alkenyl, C_1-C_{12} aralkyl, C_1-C_{12} alkaryl, C_1-C_{12} alkoxy and C_1-C_{12} hydroxyalkyl, and may contain one or more cleavable bonds, to form a derivatised polymer having the structure (VII)



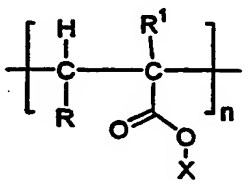
(VII)

wherein $1 \leq s \leq r$.

23 (Currently amended). A process according to claim 22 wherein R^{12} selected from the group consisting of hydrogen, methyl, ethyl and propyl, and R^{13} is selected from the group consisting of hydrogen, methyl, ethyl and propyl ~~and preferably R^{12} is hydrogen and R^{13} is methyl~~.

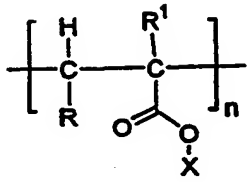
24 (Currently amended). A process according to claim 22, wherein E is selected from the group consisting of N-succinimidyl, pentachlorophenyl, pentafluorophenyl, para-nitrophenyl, dinitrophenyl, N-phthalimido, N-norbornyl, cyanomethyl, pyridyl, trichlorotriazine, 5-chloroquinilino, and imidazole~~, preferably N-succinimidyl or imidazole, most preferably N-succinimidyl~~.

25 (previously presented). A process according to claim 23, wherein the polymer of formula (VI) is a polymer of formula (I)



(I)

26 (previously presented). A process according to claim 22, wherein the polymer of the formula (I)



(I)

is reacted in a second step with a reagent HR^x as defined in claim 22, whereby at least some of the groups -OX are replaced by $-R^x$ in the product derivatised polymer.

27 (Currently amended). A process according to claim 26, wherein HR^x is $H_2 NR^{14}$ ~~preferably NR^{14} being an N-aminoacyl or N-oligopeptidyl group~~.

28 (Currently amended). A process according to claim 27, wherein R^x comprises one or more aminoacyl groups~~, preferably 2 to 6, most preferably 4 aminoacyl groups~~.

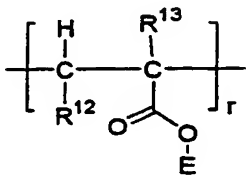
29 (Currently amended). A process according to claim 28 wherein R^x comprises a bioactive agent~~, preferably an anti-cancer drug~~.

30 (previously presented). A process according to claim 29, comprising the additional step of reacting the unreacted groups, OE or OX groups, with a solubilising group selected from the group consisting of C_1-C_{12} alkyl, C_1-C_{12} alkenyl, C_1-C_{12} aralkyl, C_1-

C_{12} alkaryl, C_1-C_{12} alkoxy, C_1-C_{12} hydroxyalkyl, C_1-C_{12} alkylamido, C_1-C_{12} alkylimido, C_1-C_{12} alkanoyl.

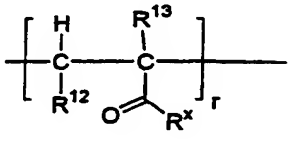
31 (Currently amended). A process for the production of block copolymers comprising the steps of:

a. reacting a polymer having the formula (VI)



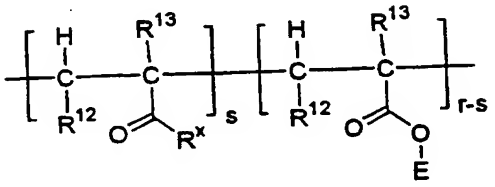
(VI)

wherein R^{12} is a group selected from the group consisting of hydrogen, C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} aralkyl, and C_1-C_{18} alkaryl groups; R^{13} is selected from the group consisting of C_1-C_6 alkyl groups; E is a carboxylate activating group and r is an integer of 5 to 500; with a reagent HR^X, wherein R^X is selected from the group consisting of $NR^{14}R^{15}$, SR^{16}, and OR^{17}, wherein R^{14} is an acyl group~~, preferably an aminoacyl group or oligopeptidyl group~~; R^{15} is selected from hydrogen, C_1-C_{18} alkyl, C_1-C_{18} alkenyl, C_1-C_{18} aralkyl, and C_1-C_{18} alkaryl; R^{16} and R^{17} are selected from the group consisting of hydrogen, ~~C_1-C_{12}~~ C_1-C_{12} alkyl, C_1-C_{12} alkenyl, C_1-C_{12} aralkyl, C_1-C_{12} alkaryl, C_1-C_{12} alkoxy and C_1-C_{12} hydroxyalkyl, [[,]] and may contain one or more cleavable bonds, to form a derivatised polymer having the structure (XV)



(XV)

b. reacting (XV) in a polymerisation reaction with between 0.01 and 100 unit equivalents of (VI) to form a polymer (XVI)



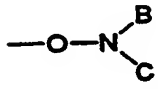
(VII)

wherein $1 \leq s \leq r$.

32 (Original). A process according to claim 31 wherein (VII) is subsequently reacted between 0.01 and 100 unit equivalents of reagent HR^X, wherein R^X is a solubility modifying group.

33 (Currently amended). A process according to claim 32, wherein R^X is a hydrophilic group selected from amino-C_{1-12} alkyl, amino-C_{1-12} dialkyl, and amino-C_{1-12} alkanol, ~~preferably 1-amino-2-propanol~~.

34 (Currently amended). A process according to claim 31, wherein step B is a Controlled Radical Polymerisation process~~, preferably one in which polymer of the structure (XV) has one terminal group A and one terminal group~~

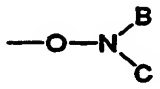
[[]]

35 (canceled).

36 (previously presented). A composition comprising a polymer as defined in claim 1 and a pharmaceutically acceptable excipient.

37 (canceled).

38 (New). A process according to claim 34, wherein step B is a Controlled Radical Polymerisation process and in which polymer of the structure (XV) has a terminal group



39 (New). A process according to claim 31, wherein R^{14} is an aminoacyl group or an oligopeptidyl group.

40 (New). A process according to claim 29, wherein R^x is an anti-cancer drug.

41 (New). A process according to claim 22, wherein R^{14} is an aminoacyl group or an oligopeptidyl group, R^{12} is hydrogen, R^{13} is methyl, E is N-succinimidyl or imidazole, and R^x is 2 to 6 aminoacyl groups.

42 (New). A process according to claim 41, wherein E is N-succinimidyl and R^x is 4 aminoacyl groups.

43 (New). A process according to claim 17, wherein the Atom Transfer Radical Polymerization initiator is an alkylbromide, and the mediator is selected from the group consisting of Cu(I)Br(Bipy)$_2$, Cu(I)Br(Bipy)N, Cu(I)Br(N, N', N", N"-pentamethyldiethylenetriamine), Cu(I)Br[methyl$_6$ tris(2-aminoethyl)amine] and Cu(I)Br(pentamethyldiethylene).

44 (New). A process according to claim 15, wherein the R^1 C_1-C_6 alkyl group is selected from the group consisting of methyl, ethyl, propyl, butyl, pentyl and isomers thereof.

45 (New). A polymer according to claim 12 wherein the anti-cancer agent is doxorubicin, daunomycin, or paclaxitel.

46 (New). A polymer according to claim 13 wherein Q is 2-hydroxypropylamino.

47 (New). A process according to claim 8, wherein R^4 is an aminoacyl group or an oligopeptidyl group and Z is 2 to 6 aminoacyl groups.

48 (New) The polymer according to claim 1, wherein X is selected from the group consisting of N-succinimidyl, pentachlorophenyl, pentafluorophenyl, para-nitrophenyl, dinitrophenyl, N-phthalimido, N-norbornyl, cyanomethyl, pyridl, trichlorotriazine, 5-chloroquinilino, and imidazole, and R is hydrogen or methyl.

49 (New). The polymer according to claim 1, wherein the molecular weight (Mw) is in the range 25,000-40,000,

50 (New). The polymer according to claim 1, wherein the polydispersity is less than 1.2.

51 (New). A composition comprising a polymer as defined in claim 50 having a molecular weight (Mw) in the range 25,000-40,000 and a pharmaceutically acceptable excipient.